IN THE CLAIMS:

Please add new claims 22-24, as shown in the complete list of claims that is presented below.

1. (previously presented) A method for the continuous real time tracking of the position of a plurality of mobile objects in a defined multidimensional space, comprising:

attaching mobile transmitter modules to the mobile objects;

receiving signals from the transmitter modules by a stationary receiving and signal processing network; and

processing the received signals centrally,

wherein the signals emitted by transmitter modules are electromagnetic waves which are transmitted within a frequency band range utilizing a time division multiplexing technique,

wherein an available frequency band is used as a single channel in order to maximize accuracy of position detection,

wherein a communication process between transmitters in the transmitter modules and receivers of the receiving and signal processing network is based on a principle of pseudo-random time division multiplexing using non synchronized pseudo-random patterns, and

wherein the transmitters of the transmitter modules emit transmission signals in burst transmissions that are characterized by a low cross correlation.

2. (previously presented) A method in accordance with Claim 1, wherein the principle of pseudo-random time division multiplexing comprises a process of transmitting at isolated, irregular time points, whereby each transmitter uses a different pseudo-random sequence for the transmitting time point.

3. (previously presented) A method in accordance with Claim 1, wherein the receivers estimate the time point of the next burst transmission from a certain transmitter based on the pseudo-random time division multiplexing and the pseudo-random pattern.

4. (previously presented) A method in accordance with Claim 3, wherein only those signals are evaluated by the receiving and signal processing network which arise at the predetermined time point of the next burst transmission.

5. (previously presented) A method in accordance with Claim 3, wherein the next burst transmission from the certain transmitter is determined continuously.

6. (previously presented) A method in accordance with Claim 1, wherein the transmitter modules are miniaturized, at least one of the transmitter modules being small enough to be inserted into a ball.

7. (previously presented) A method in accordance with Claim 1, wherein the frequency band range lies at approximately 2.4 GHz.

8. (previously presented) A method in accordance with Claim 1, wherein the frequency band range has a bandwidth of 80 MHz.

9. (previously presented) A method in accordance with Claim 1, wherein the receiving and signal processing network comprises stationary reference transmitters that are used as position references for the purposes of minimizing errors and for calibration of the positions of the transmitter modules, said reference transmitters transmitting an identification code in a sequence, the signals from said reference transmitters being detected by receivers of the receiving and signal processing network for purposes of determining their time of arrival at the respective receivers.

10. (previously presented) A method in accordance with Claim 9, wherein the reference transmitters are synchronized over cables.

11. (previously presented) A method in accordance with Claim 1, wherein the burst transmissions are sent utilizing non synchronized pseudo-random patterns which are a combination of access mechanisms, time division multiplexing, and code division multiplexing.

12. (previously presented) A method in accordance with Claim 1, wherein the pseudo-random patterns are prime number sequences.

13. (previously presented) A method in accordance with Claim 1, wherein in the case of the burst transmissions a separation of at least two signals of different origin arriving randomly at the same time is effected by a receiver of the receiving and signal processing network.

14. (previously presented) A method in accordance with Claim 1, wherein the burst transmissions are transmitted at a pulse rate which is so high that undetected individual values are tolerated.

15. (previously presented) A method in accordance with Claim 1, wherein non synchronized burst transmissions from the transmitter modules are synchronized with the aid of receivers in the transmitter modules in order to reduce the probability of overlaps when there are many transmitter modules.

16. (previously presented) A method in accordance with Claim 1, wherein the receiving and signal processing network comprises means for receiving analog signals, digitizing the received signals, and determining and storing time points, at which the signals from respective transmitter modules are received.

17. (previously presented) A method in accordance with Claim 1, wherein different algorithms can be used by the receiving and signal processing network for the processing of received and stored signals in different situations.

18. (previously presented) A method in accordance with Claim 17, wherein the receiving and signal processing network comprises means for dividing received signals into sections for processing of the received signals, and the best respective algorithm or a plurality of algorithms are used simultaneously for the individual sections.

19. (previously presented) A method in accordance with Claim 17, wherein the receiving and signal processing network comprises means for dividing received signals into sections for processing of the received signals, and a rotated time axis is also used for individual sections so that discontinuities in highly dynamic processes are approached from two sides.

20. (previously presented) A system for transmitting electromagnetic waves for use in a method for continuous real time tracking of the position of mobile objects in a defined multidimensional space, comprising:

a plurality of transmitter modules which are attached to the mobile objects; and

a stationary receiving and signal processing network for receiving and processing signals transmitted by the transmitter modules, said signals being waves which are transmitted in a frequency band range using a time division multiplexing technique,

wherein a transmission process is carried out between the transmitter modules and the receiving and signal processing network in an available frequency band serving as a single channel using pseudo-random time division multiplexing with non synchronized pseudo-random patterns, and

wherein the transmitter modules comprise transmitter means for transmitting signals in different burst transmissions having a low cross correlation.

21. (previously presented) A system in accordance with Claim 20, further comprising reference transmitters that receive trigger and clock pulse signals from the receiving and signal processing network.

22. (new) A method for tracking the position of a mobile object, comprising:

attaching a mobile transmitter module to the mobile object;

placing at least one reference transmitter module at at least one known position; and

receiving signals emitted by the transmitter modules with a plurality of receivers,

wherein an available frequency band is used as a single channel in order to maximize position detection;

wherein a communication process between the receivers and the transmitter modules is based on a principle of pseudo-random time division multiplexing using non synchronized pseudo-random patterns, and

wherein the transmitter modules emit the signals in burst transmissions that are characterized by a low cross correlation.

23. (new) A method for the continuous tracking of the position of a mobile object in a defined multidimensional space in which-at least one transmitter module is disposed, comprising:

attaching said at least one transmitter module to the mobile object;

receiving signals from the at least one transmitter module by a stationary receiving and signal processing network; and

processing the received signals centrally,

wherein the signals emitted by the at least one transmitter module are electromagnetic waves which are transmitted within a frequency band range utilizing a time division multiplexing technique,

wherein an available frequency band is used as a single channel in order to maximize accuracy of position detection,

wherein a communication process between a transmitter in the at least one transmitter module and receivers of the receiving and signal processing network is based on a principle of pseudo-random time division multiplexing using non synchronized pseudo-random patterns, and

wherein the transmitter of the at least one transmitter module emits transmission signals in burst transmissions that are characterized by a low cross correlation.

24. (new) A method for the continuous tracking of the position of a mobile object in a defined multidimensional space in which a plurality of transmitter modules are disposed, comprising:

attaching one of said transmitter modules to the mobile object;

receiving signals from the transmitter modules by a stationary receiving and signal processing network; and

processing the received signals centrally,

wherein the signals emitted by the transmitter modules are electromagnetic waves which are transmitted within a frequency band range utilizing a time division multiplexing technique,

wherein an available frequency band is used as a single channel in order to maximize accuracy of position detection,

wherein a communication process between transmitters in the transmitter modules and receivers of the receiving and signal processing network is based on a principle of pseudo-random time division multiplexing using non synchronized pseudo-random patterns, and

wherein the transmitters of the transmitter modules emit transmission signals in burst transmissions that are characterized by a low cross correlation.